Method of Quantitative Analysis of Nitrogen Contained in Cast Iron. (IX) : Analyses of some components, such ns Al, Ti, Si and Nitrogen in Cast Iron, particulary being considered on the Correlation between the three former components and the latter

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15. Method of Quantitative Analysis of Nitrogen Contained in Cast Iron. (IX)

Analyses of some components, such as Al, Ti, Si and Nitrogen in Cast Iron, particulary being considered on the Correlation between the three former components and the latter.

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We studied the relation among the behaviors of various components in cast iron, especially such as Al, Ti, Si and Nitrogen extracted by HCl elsolution (we call this extracted solution "main solution" hereunder), and clarified the correlation among the extraction percentage of Al, Ti, Si, etc in the extracts, decomposition time, and N quantity in the main solution.

We adopted a extracting apparatus after the JES Standard method. Following are the results;

Sample: J.S.S. Ferro-Ti Alloy and Cast Iron Wt; 5 g; fineness; through 150 mesh, treated with alcohol-ether.

HCl solution: 90 cc of 6 N concentration.

Decomp. Temp.: 110°C.

Components of Cast Iron

	C%	Si%	Al%	Ti%	Fe%
Fe-Ti	6.80	5.21	0.49	15.52	64.89
Cast Iron	3.77	2.81	0.33	0.75	

Components of the main solution

	Time in min.	Extract (%)				Nitrogen content in the main sol.
		Si%	Al%	Ti%	Fe%	
Fe-Ti	15	5.67	45.22	0.69	99.38	
	30	4.77	100.00	0.69	99.92	
	60	4.14	100.00	0.69	99.98	
	180	3.64	100.00	0.97	100.00	
	300	5.88	100.00	1.21	100.00	
Cast iron	15	30.50	44.54	0.24	—	0.027
	30	30.56	66.70	0.24	—	0.036
	60	20.82	100.00	0.24	—	0.040
	180	16.40	100.00	0.34	—	0.040
	300	21.08	100.00	0.96	—	0.040

From these results under the above mentioned conditions, we infer that nearly the total nitrogen which had been mainly combined with Fe and Al in the original cast iron are perfectly extracted arond in 30 to 60 min..